REMARKS

Claims 1-2, 4-19 and 21-27 are pending in this application. Claims 3 and 20 have been canceled. Claims 21-27 have been added. Support for new claims 21-27 may be found in the subject matter of original claims 1, 4, 7 and 19. New claims 21-27 in no way add new matter. As such, entry and consideration thereof are respectfully requested.

The specification has been amended on page 22 final paragraph to insert the serial number of the corresponding U.S. provisional application to the cited Swedish patent application. This amendment is made to make the citation more acceptable for U.S. patent practice. The Swedish application and U.S. provisional application contain the same disclosure, as such, no new matter has been added by this amendment.

Rejections under 35 U.S.C.§112, 2nd paragraph

Claims 1-20 have been rejected under 35 U.S.C.§112, 2nd paragraph as being indefinite. More specifically, the Examiner raises the following issues regarding the claims.

Claims 1 and 19 have been rejected as being unclear with the assertion that the specification indicates that an object of the invention is to dispense into the disc while the disc is spinning,

but the claims do not recite this feature. Claims 1 and 19 have been amended to recite the feature that the disc is spinning.

Claim 2 has been rejected for being unclear as to whether all the parameters must be programmed or only one or more. In addition, the features of "the dispensing signal" and "the dispensing orifice" are said to lack antecedent basis. Claim 2 has been amended to delete "for instance amplitude, and/or frequency f of the dispensing pulses etc". Claim 2 has been further amended to have proper antecedent basis for all elements.

Claim 3 has been rejected as being unclear in the reference to the parameters of claim 2, but depending from claim 1. Claim 17 has been similarly rejected. Claim 3 has been cancelled, thus rendering this rejection moot. Claim 17 has been amended to depend from claim 2.

Claim 7 has been rejected for lacking antecedent basis for "the microcavity." Claim 7 has been amended to provide proper antecedent basis for all features by the amendment to depend from claim 5.

Claim 8 has been rejected for being unclear with regard to the relationship between "a sample inlet port" and "an inlet port" in

claim 8 and "an inlet port" in claim 1. Claims 1 and 8 have been amended to address this issue.

Claim 9 has been rejected as being unclear in the recitation of "said at least one liquid." The phrase "said at least on liquid" has been deleted from claim 9, thus rendering the rejection moot.

Claims 10-12 and 17 have been rejected for lacking antecedent basis for "the dispensing signal". Claim 1 has been amended to provide proper antecedent basis for "the dispensing signal" in claims 10-12 and 17.

Claim 18 has been rejected for lacking antecedent basis for "the dispenser arrangement." Applicants respectfully note that claim 1, from which claim 18 depends, provides antecedent basis for "the dispenser arrangement" as element (i)(2).

Claim 20 has been rejected for being generally unclear in the dependency from both claims 19 and 2. Claim 20 has been cancelled, thus rendering this rejection moot.

The amendments to or cancellation of claims 1-20 as indicated above, address and overcome the rejections of the claims as being

indefinite. As such, withdrawal of the rejections is respectfully requested.

Rejections under 35 U.S.C.§102

Claims 1-2, 5, 7 and 10-20 have been rejected under 35 U.S.C.§102(e) as being anticipated by Hubbard. Hubbard is asserted to teach a microfluidic rotatable disc and moveable dispenser for supplying fluids to inlet ports on the disc, which has the features of claims 1-2, 5, 7 and 10-20. Applicants traverse this rejection and withdrawal thereof is respectfully requested.

The present invention as encompassed by claim 1 is directed to a method for dispensing droplets of a liquid to a microsystem in the form of a disc having a target area (TA^0I) in its surface by

i) providing a disc which has a triggering mark, and a dispenser arrangement having:

a) a spinner for rotating the disc around its axis,

b) a drop dispenser permitting dispensation of droplets from a dispenser orifice of said drop dispenser to target area TA^0I

c) a fixed trigger position outside the disc, and

d) a controller which is capable of triggering a dispensing signal causing dispensation of one or more droplets from the dispenser orifice into the target area (TA^0I) as a function of the triggering mark passing the trigger position;

ii) placing the disc in the spinner and programming the controller with values for one or more dispensing parameters that will give dispensation of the droplets to target area TA^0I; and

iii) dispensing the droplets while spinning the disc.

"To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently." In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). Hubbard fails to disclose each feature of the claimed invention. Hubbard fails to disclose a system permitting dispensation of droplets while the disc is spinning. There is no triggering mark on the disc of Hubbard that combined with

a) an external fixed trigger position equipped with a detector, and

b) a controller that trigger a dispensing signal that causes dispensation to specific target areas when the triggering mark passes the trigger position.

Hubbard presents no solution or method for addressing the problems associated with dispensation to moving substrates/discs. The present method requires that the disc be in motion. As a result, dispensation must be initiated before a target area is actually in front of a dispenser orifice ("passing the target

area"). Hitting a target area with an ejected droplet will depend on a number of factors/parameters, as described in the instant specification, e.g. spinning velocity, density of the liquid, shape of a dispensing signal, distance between dispenser orifice and disc surface etc. Hubbard fails to disclose or address any of these considerations.

The disc of Hubbard has calibration holes in the circumference. The position of the individual target areas are then given in relation to these holes, meaning that once the apparatus to be used has recognized the holes it will also know where the reaction sites (target areas) are on the disc surface. This in turn will enable proper alignment of the dispenser with the reaction sites so that targeted dispensation can be triggered. With Hubbard, the calibration procedure as such does not trigger any dispensation.

Hubbard also provides for separate location marks in association with the reaction sites (target area). These marks are recognized as sensors on a movable multifunction head that also comprises the dispensor. Hubbard teaches that such an arrangement improves alignment possibilities. See columns 13-14, bridging paragraph, column 10, lines 23-38, for instance. There is no fixed trigger position outside the disc of Hubbard. In Hubbard, the dispenser is first aligned with a reaction site (target area) and then dispensation to the reaction site can start. The instant

invention, on the other hand, is a moving system without any discrete alignments and the dispensation is triggered "..as a function of the triggering mark passing the trigger position;" (claim 1(ii)d). As such, Hubbard fails to disclose each feature of the instant invention and the instnt invention is not anticipated by the disclosure in Hubbard.

Rejections under 35 U.S.C.§103

Claims 3-4, 6-9 have been rejected under 35 U.S.C.§103 as being obvious over Hubbard combined with Sheppard. The Examiner asserts that Hubbard fails to teach applying a gradient to elute substances bound to the affinity packing. Sheppard is asserted to teach a microfluidic device having affinity packing and that conventional elution fluids may be used to recover compounds bound to the affinity packing. The Examiner asserts that it would be obvious to one of ordinary skill to provide an elution gradient in the method of Hubbard to elute compounds using conventional eluents from an affinity packing bed in a microfluidic device of Sheppard. Applicants traverse this rejection and withdrawal thereof is respectfully requested.

As noted above, Hubbard fails to disclose a method of targeted dispensation to a moving disc. Sheppard similarly fails to disclose the targeted dispensation of the droplets to a moving disc. As such, the invention cannot be achieved from Hubbard

combined with Sheppard because omission of this necessary feature from both references.

The instant invention is further distinguished from the relied on references for the feature of the gradient as noted by the Examiner. The Examiner relies on Sheppard for teaching the use of a gradient because as noted by the Examiner, Hubbard fails to teach the use of a gradient. However, there is also no disclosure regarding the use of a gradient in Sheppard. As such, the instant invention cannot be achieved from the combined references and is therefore not *prima facie* obvious over the references. Withdrawal of the rejection and allowance of the claims are respectfully requested.

Claims 1-2, 10-14 and 16-20 have been rejected under 35 U.S.C. §103 as being obvious over Zaffaroni combined with Hubbard. Zaffaroni is asserted to teach a method and apparatus for depositing fluids on a rotating disc. Zaffaroni is asserted to differ from the indicated claims only in failing to teach a fixed trigger position outside the disc. Hubbard is asserted to teach a device similar to Zaffaroni having a fixed trigger position outside the disk. The Examiner asserts that it would be obvious to use the fixed trigger position of Hubbard in the device of Zaffaroni.

Applicants traverse this rejection and withdrawal thereof is respectfully requested.

The Examiner asserts that the device/method of Zaffaroni is similar to Hubbard and anticipates the instant invention except for Zaffaroni's lack of a fixed trigger position outside the disc. The Examiner further states that it would be obvious to apply the fixed trigger position of Hubbard to the system of Zaffaroni. However, the Examiner's assessment of Zaffaroni compared to the invention is in error.

As with Hubbard, Zaffaroni similarly fails to disclose dispensation of the droplets while the spinning is spinning. In addition, as noted by the Examiner, Zaffaroni fails to disclose a fixed trigger position. However, as discussed above, Hubbard similarly fails to disclose a fixed trigger position of the invention. As such, the invention cannot be achieved from the combined teachings of Hubbard and Zaffaroni and withdrawal of the rejection is respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact MaryAnne Armstrong (Reg. No. 60,069) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment(s):

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